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Materials Management Office
1201 Main Street, Suite 600
Columbia, South Carolina 29201

Section:
Page: 1
Date: 02/06/2015

**02/06/2015
UPDATE**

Contract extension – Please see more details under the Contract Period Section below.

Please note:

Contracts with Control Technologies and Southeastern Safety ended on 02/07/2012.
Both contractors elected not to exercise the remaining option terms (opted out).

The sole remaining contract is with Temple Inc. Please plan and place orders accordingly. At this time the state intends to continue in good faith with the Temple Inc. contract.

STATEWIDE TERM CONTRACT FOR TRAFFIC SIGNAL CONTROLLERS

[SPECIFICATIONS](#)

AWARDED TO: TEMPLE, INC
PO BOX 2066
DECATUR, AL 35602

CONTACT PERSON: BYRON HOOD
byron.hood@temple-inc.com

VENDOR NUMBER: 700003329

F.E.I.N.: 63-0573758

CONTRACT NUMBER: 4400002134

CONTRACT PERIOD: February 8, 2010 – **February 7, 2016**

Temple, Inc. has agreed to hold firm the current contract pricing up till one (1) year until the new contract has been awarded. Once the new contract is awarded, this contract will expire.

DELIVERY: 60 Days

ORDER METHODS: Telephone: 800-633-3221
Web-site:
Fax: 256-353-3351

<u>ITEM #</u>	<u>DESCRIPTION</u>	<u>TEMPLE, INC</u>
A-1	Model 2070L Controller	\$ 1,644.00
A-2	Model 2010 ECL-ip Conflict Monitor	\$ 553.00
A-3	Model 332A Cabinet Assembly	\$ 7,907.00
A-4	Model 336S Cabinet Assembly	\$ 6,066.00
A-5	Model 332 Cabinet	\$ 1,625.00
A-6	Model 200 Load Switch	\$ 21.00
A-7	Model 204 Flasher	\$ 22.00
A-8	Rack Mount, LCD Enhanced/Intelligent Loop Detector	\$ 156.00
A-9	Model 222 Loop Detector	\$ 63.00
A-10	Model 242 DC Isolator	\$ 29.00
A-11	Model 430 Flash Transfer Relay	\$ 23.00
A-12	Suitcase Tester for 170 and 2070 Controllers	\$ 2,946.00
A-13	Automatic 210N AND 2010 ECL Conflict Monitor Tester	\$ 9,800.00
A-14	Aluminum Extender Base for 336S Cabinet	\$ 95.00
A-15	Replacement Red Enable board for 332A and 336S Cabinet Assemblies	\$ 36.00
A-16	Replacement #3 Lock and key set for all Cabinet Assemblies	\$ 55.00
A-17	Model 2070-7A, Asynchronous Serial Comm Module	\$ 215.00
A-18	TFS Model FO-512 Fiber Optic Data Link	\$ 825.00
A-19	US Robotics V.92 auto-dial/auto-answer External dial-up modem	\$ 118.00
A-20	Cabinet Assembly Display Unit	\$ 1,950.00
A-21	Model 206S Cabinet Power Supply	\$ 219.00

SPECIFICATIONS FOR
TRAFFIC SIGNAL CONTROLLERS
TRAFFIC SIGNAL CABINETS
RELATED EQUIPMENT

- PART A - MATERIALS -

1. SCOPE -

1.1 Purpose -

This Specification states the minimum acceptable requirements, materials, and workmanship for traffic signal control equipment to be supplied to the South Carolina Department of Transportation (herein after Department).

1.2 List -

The equipment specified herein consists of the following:

- **Item A1** - Model 2070L Controller
- **Item A2** - Model 2010 ECL-IP Conflict Monitor
- **Item A3** - Model 332A Cabinet Assembly
- **Item A4** - Model 336S Cabinet Assembly
- **Item A5** - Model 332 Cabinet
- **Item A6** - Model 200 Load Switch
- **Item A7** - Model 204 Flasher
- **Item A8** - Rack Mount, LCD Enhanced/Intelligent Loop Detector
- **Item A9** - Model 222 Loop Detector
- **Item A10** - Model 242 DC Isolator
- **Item A11** - Model 430 Flash Transfer Relay
- **Item A12** - Suitcase Tester for 170/2070 Controllers
- **Item A13** - Automatic 210N AND 2010 ECL Conflict Monitor Tester
- **Item A14** - Aluminum Extender Base for 336S Cabinet
- **Item A15** - Replacement Red Enable board for 332A and 336S Cabinet Assemblies
- **Item A16** - Replacement #3 Lock and key set for all Cabinet Assemblies
- **Item A17** - Model 2070-7A, Asynchronous Serial Comm Module
- **Item A18** - External Fiber Optic Modem
- **Item A19** - External Dial-up Modem
- **Item A20** - Cabinet Assembly Display Unit
- **Item A21** - Model 206 Switching Cabinet Power Supply

1.3 Bids/Lots -

The Department is accepting bids based upon one "LOT".

Items A1 – A21 will establish "Unit Prices" for present and future purchases.

Item definitions:

- **Item A3** (332A Cabinet Assembly) - A complete operating Cabinet Assembly containing the standard CALTRANS equipment complement with/including:

ONE (1) of **Item A2**, plus TWELVE (12) of **Item A6** (Load Switch), TWO (2) of **Item A10** (DC Isolator), SIX (6) of **Item A11** (Flash Transfer Relay), TWO (2) of **Item A7** (Flasher) and EIGHT (8) of **Item A8** (LCD Enhanced/Intelligent Loop Detector). **The 332A Cabinet Assembly shall NOT include a 2070L Controller.**

- **Item A4** (336S Cabinet Assembly) - A complete operating Cabinet Assembly containing the standard CALTRANS equipment complement with/including:

ONE (1) of **Item A2**, plus EIGHT (8) of **Item A6** (Load Switch), TWO (2) of **Item A10** (DC Isolator), FOUR (4) of **Item A11** (Flash Transfer Relay), TWO (2) of **Item A7** (Flasher) and FOUR (4) of **Item A8** (LCD Enhanced/Intelligent Loop Detector). **The 336S Cabinet Assembly shall NOT include a 2070L Controller.**

2. **SPECIFICATIONS -**

2.1 General -

2.1.1 The equipment to be furnished shall be in accordance with CALTRANS *Transportation Electrical Equipment Specifications* (TEES), dated July 21, 2008 except as required herein. Equipment furnished shall also be approved as stated on the current North Carolina Department of Transportation Qualified Products List.

Further, the equipment shall meet the special Department requirements, as stated in the following Specifications. In case of conflict, the Department Specifications shall govern.

2.2 Special Provisions -

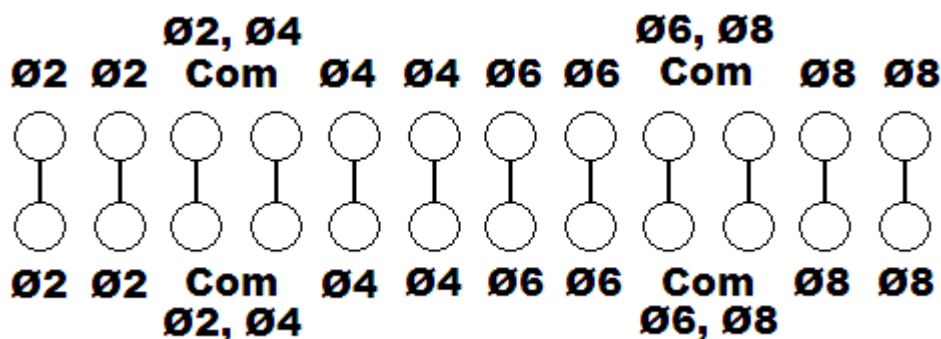
In addition to meeting the CALTRANS and NCDOT specifications as stated in section 2.1, all equipment shall also meet the following:

- Nylon card-guides shall be integrated into the cabinet assemblies where all Load Switch, Flasher and Input File Hardware may be installed. The card guide slots shall be of sufficient depth to support pluggable devices when they are not fully inserted into the electrical receptacles, and the installation or removal of pluggable devices shall not require excessive force.
- Raise AC Service terminal block to a minimum of 6" from base of the rack-supports in all Cabinet Assemblies.
- Install an aluminum plate for reinforcement of the pole-mounting brackets. This plate shall be installed inside the 336S Cabinet Assembly and shall utilize threaded PEM nuts or self-clinching fasteners for simple installation and removal of exterior pole-mount bracket bolts without the use of any tool, inside the Cabinet Assembly.
- Install (4) support braces for the rack assembly. Braces shall be welded, with a continuous seam and (2) shall be installed on each side, symmetrically centered from front to back, between the rack assembly uprights.
- To prevent accidental, electrical contact between the Cabinet Assembly and Conflict Monitor Unit, the entire side panel within the output file that is directly adjacent to the solder-side of the Conflict Monitor Unit shall be insulated with non-conductive sheeting. This sheeting shall not degrade over time and shall remain attached to the output file throughout the life of the Cabinet Assembly. This sheeting shall be of minimal thickness as to not impede the insertion and/or removal of the Conflict Monitor Unit.
- Red enable board shall implement individual, 2-position dipswitches allowing any unused red channel to be tied to AC+.
- The Red Enable board shall be easily removable and replaceable from the outside of the Output File Assembly. Removal and replacement shall not require the Output File Assembly to be opened. The design shall be such that the board can be easily unplugged and replaced. During normal operation the board shall be secured to the Output File Assembly.
- The Output File Assembly shall implement a hinged, clear, plastic cover to protect the Red Enable Board during normal operation. This cover shall be hinged on the left or right side. When closed, the side opposite the hinge shall be secured to the Output File

Assembly without the use of any hardware or tool. When fully opened, the cover shall not inhibit the removal, replacement or configuration of the Red Enable board. Removal/replacement of the Red Enable Board shall not require the removal of the protective cover.

- The Power Supply furnished in all 332A and 336S Cabinet Assemblies shall be the EDI 206L Switching Power Supply, or approved equivalent.
- The Cabinet Assemblies shall be provided with a means of securing the Model 206L Power Supply into place during normal operation and shall prevent the Power Supply from being removed unintentionally. The method used must be strong enough to support the weight of the power supply, shall be accessible from the FRONT of the Cabinet Assembly and shall not modify the Power Supply in any way. The insertion or removal of the Cabinet Power Supply shall not require the use of any tool.
- All Cabinet Assemblies shall have BOTH doors ventilated and are to include disposable filters that are secured in place, yet easily removed or re-installed for replacement.
- Twisted-pair communication will not be used for any new cabinet installations, therefore an EDCO PC642 surge protection device and applicable 170-style cabling will not be required for any Cabinet Assemblies.
- Front and rear doors of all cabinet assemblies shall implement a #3 Corbin Locking assembly. Two (2) BRASS keys are to be included with each Cabinet Assembly.
- The front and rear door locks for all Cabinet Assemblies shall have a minimum of 1 mm (0.03937") clearance between the edge of each side of the lock bolt and the cabinet's latch cam assembly.
- Front and rear door handles for all cabinet assemblies shall turn away from the door lock/key to open the cabinet door.
- Furnish 2 sets of non-fading cabinet diagrams and schematics that are to be placed in a clear, sealable, water tight, plastic bag and stored within the front-door-mounted laptop shelf/storage compartment. See Section 3.1.3 "Laptop Shelf" for additional requirements.
- The Flash Sense/Stop Time terminations in the Input File Assembly shall be wired such that a DC Isolator will not be required for implementation of these functions by the Conflict Monitor Unit.
- Furnish (2) Model 242 DC Isolators with all 332A and 336S Cabinet assemblies. These items are to be installed within the cabinet input file, in the pedestrian input slots.
- Furnish (8) Enhanced LCD Loop Detectors with all 332A Cabinet Assemblies. These are to be installed in the first (8) slots of the upper input file assembly. See section 11.1 for LCD Detector requirements.
- Furnish (4) Enhanced LCD Loop Detectors with all 336S Cabinet Assemblies. These are to be installed in the first (4) slots of the input file assembly. See section 11.1 for LCD Detector requirements.
- Furnish (12) Model 200 Load Switches with all 332A Cabinet Assemblies. These are to be installed in the following output file channels: 1, 2, 4, 5, 6, 8, 13, 14, 15, 16, 17, 18. See section 7.1 for Load Switch requirements.
- Furnish (8) Model 200 Load Switches with all 336S Cabinet Assemblies. These are to be installed in the following output file channels: 2, 4, 6, 8, 13, 14, 15, 16. See section 7.1 for Load Switch requirements.
- Furnish (2) Model 204 Flashers with all 332A and 336S Cabinet Assemblies. These are to be installed in the flasher slots within the PDA. See section 8.1 for Flasher requirements.
- Load Switches and Flashers are to be secured within their respective slots for shipment, with ½" string-reinforced tape as a minimum.
- Furnish a Thermostat-controlled, dual-fan (100CFM minimum rating per fan) ventilation system in all 332 series Cabinet Assemblies.
- Furnish a Thermostat-controlled, single-fan (100CFM minimum rating) ventilation system in all 336S Cabinet Assemblies.
- Cabinet Thermostat to be factory-set to 90 degrees in all Cabinet Assemblies.

- Cabinet Thermostat and thermostat temperature setting shall be easily accessible and adjustable from the front of all Cabinet Assemblies.
- Cabinet Thermostat terminals shall be insulated to prevent accidental electric shock.
- Police panel door shall be insulated to prevent water from entering the cabinet assembly. The insulation material used and its ability to resist water-penetration shall not degrade over time.
- The Police panel assembly shall have a drain to prevent water from collecting within the assembly. Per CALTRANS, the drain shall be channeled to the outside of the cabinet.
- The protective cover for the police panel key opening shall be snug with the police panel door and shall not move freely. However, this protective cover shall be easily opened without having to use any tool.
- Manual Control cord shall be permanently hard-wired into the Police panel assembly to prevent removal.
- Manual Cord shall be anchored to the inside of the cabinet chassis to prevent over-extension and/or damage to the Police Panel terminations when the cord is extended for use.
- For storage, the Manual Control cord should be fed into the cabinet assembly through a grommet opening at the top of the police panel. The location of the opening shall not allow water to enter the cabinet. Additionally, the cord shall be fed for storage into an area where there is no risk of 'snagging' the cable when it is extended for use.
- For additional security, a quick-connect/quick-disconnect, molex-style connector shall be used for the Police Panel wiring inside the Cabinet Assembly. This connector shall NOT be accessible from the Police Panel and should be easily accessible from inside the cabinet. The wiring of this connector shall be such that, when disconnected, the Manual Control Enable/Advance Enable function on the Police Panel, as well as the Interval Advance/Advance function on the manual cord cannot be applied to the Controller Unit.
- The Police panel shall be wired such that the Interval Advance/Advance function cannot be applied to the Controller Unit when the Manual/Auto switch is in the Auto position.
- The Cabinet Assembly Surge Protection device shall be the EDCO SHA-1250 with the SHA-1250-BASE-A (or approved plug-in equivalent). The Surge Protection device shall be easily accessible within the Cabinet Assembly.
- All Vehicle and Pedestrian terminals on the Loop Input Termination Panel shall be clearly labeled with permanent screening, with the default CALTRANS phase assignment, in all 332A and 336S Cabinet Assemblies.
- The 332A Cabinet Assembly shall include additional terminations for Pedestrian Pushbutton inputs. These are to be wired in parallel with the standard input file terminations and surge protection. A Minimum of 24 extra terminals (12-position, dual-bus terminal strip) shall be provided, allowing 16 additional termination points for 4 Pedestrian Phases. The remaining 8 termination points shall be for the shared or "common" input for the adjacent Pedestrian Phase terminations. This termination panel shall be easily accessible, clearly labeled with permanent screening and may be placed in any available space on the side panel containing the standard Loop and Pedestrian input terminations. The required configuration is shown here:



- The 332A and 336S Cabinet Assemblies shall have a 'Detector Test Panel' installed above the Controller Unit. The panel shall be installed within the rack assembly and will have (8) 3-position mini-toggle switches, symmetrically spaced and horizontally arranged for placing calls to the Controller Unit. 3-position On-Off-On switches shall activate inputs. Upward motion of the switch shall lock into place and shall place a vehicle call to the Controller Unit until the switch is manually returned to center position. The center position of the switch shall not inhibit normal detector operation. Downward motion of the switch shall place a momentary closure vehicle call and will allow the intersection to resume normal detector operation when released. This panel shall be clearly labeled with permanent screening beneath each switch. The labeling shall identify each detector switch and default phase assignment for phases 1 through 8. The panel should also be titled "Vehicle Call Panel" and shall include a legend for switch operation: "On, Auto, Pulse". The panel shall be wired as follows:

336S Cabinet		332A cabinet	
Detector Switches	Terminal	Detector Switches	Terminal
Phase 1	I1-F	Phase 1	I1-W
Phase 2	I2-F	Phase 2	I4-W
Phase 3	I3-F	Phase 3	I5-W
Phase 4	I4-F	Phase 4	I8-W
Phase 5	I5-F	Phase 5	J1-W
Phase 6	I6-F	Phase 6	J4-W
Phase 7	I7-F	Phase 7	J5-W
Phase 8	I8-F	Phase 8	J8-W

2.2.1 BIDS SHALL PROVIDE a certification that the equipment proposed is included on the most current CALTRANS QUALIFIED PRODUCTS LIST and the North Carolina Department of Transportation Qualified Products List.

Exception: Department specific equipment that is not defined in the CALTRANS Specification is exempt from this QPL requirement.

2.2.2 APPARENT LOW BIDDER SHALL SUBMIT one each of the exact cabinets they will supply, (one 336S and one 332A) for inspection before the contract is awarded.

2.3 Related Specification And Standards -

All equipment furnished shall conform to these Specifications. Further, equipment shall conform to the applicable requirements of Underwriter's Laboratory Incorporated (UL); the Electronic Industries

Association (EIA); the National Electric Code (NEC); the American Society for Testing and Materials (ASTM); the American National Standards Institute (ANSI); and other applicable standards and specifications.

3. DEPARTMENT REQUIREMENTS -

This section specifies Department specific requirements that extend or modify the CALTRANS Specification.

3.1 Cabinet Requirements -

3.1.1 Mounting -

- Each 336S Cabinet shall be supplied with a removable base plate. Two (2) POLE mounting brackets shall be attached to each 336S cabinet. See Section 2.2 "Special Provisions" for additional requirements.

- For 336S and 332A Cabinet Assemblies, the BASE mounting anchor-bolt pattern shall be as specified in the CALTRANS Specifications.

- Aluminum Extender Base for 336S Cabinets - (Item A14) For 336S cabinets, an 8", aluminum extender base shall be available, manufactured in the shape and dimensions that match the shape, dimensions and bolt-pattern of a 336S Cabinet Assembly. This item shall be ordered at Department option. The appropriate stainless steel hardware (nuts, bolts and washers) shall be included with each extender base to sufficiently mount the base to the 336S Cabinet Assembly.

3.1.2 Police Button - Each 332A and 336S Cabinet Assembly shall be provided with a manual police push button on an insulated cord allowing the operator to stand a minimum of 6' from the Cabinet Assembly, permanently mounted in conjunction with a manual/auto switch. When placed in the manual position, Manual Control Enable or Advance Enable shall be applied to the Controller, and Minimum Recall shall be applied to all used phases. Activation of the push button shall apply the Interval Advance or Advance input to the Controller Unit. Manual advancement will be prohibited in the minimum green, and clearance timing intervals. See Section 2.2 "Special Provisions" for additional requirements.

3.1.3 Laptop Shelf - For all 332, 332A and 336S Cabinet Assemblies, a hinged, aluminum shelf and integrated storage compartment shall be installed on the front door, inside the Cabinet Assembly. To allow better ventilation throughout the cabinet and rack, a sliding shelf/drawer within the rack assembly will not be permitted. The shelf shall have a smooth, non-slip surface, sufficient for use as a writing platform and of sufficient size and rigidity to support a typical laptop computer when extended for use. This shelf shall have rounded or insulated edges that do not have the potential to physically harm the user. The shelf shall lock into place when folded for storage. Locking the shelf for storage and/or extending for use shall not require the use of any tool.

3.1.4 Loads - "Ped-Yellows" shall be provided with "dummy loads" consisting of load resistors rated at 5 watts minimum. The impedance of the load resistors shall be such that the Conflict Monitor Unit does NOT see a false indication for the yellow output of the pedestrian channels.

3.1.5 Lights - Each Cabinet shall include Two (2) Fluorescent Lighting Fixtures. One mounted inside the top-front portion of the Cabinet and one mounted inside the top-rear portion of the cabinet. Both fixtures shall include a 15-watt, white fluorescent light bulb and shall include an easily accessible on-off switch. Door-actuated switches shall be installed to turn on the cabinet lights when either the front or rear door are opened. Light bulbs, or light fixture covers shall be secured in place for shipment via ½" string tape.

3.2 Surge Protection -

3.2.1 General - Each 336S and 332A Cabinet shall be provided with devices to protect the control equipment from surges and over voltages. This shall include incoming power lines, the Input File, the Output File (load switch-packs), and communication lines. The surge protection for the

Input File shall be in accordance with the assignment of the slots of a standard 336S Cabinet assembly. Surge protector termination panels shall be provided, attached to the Cabinet rack assembly. AC isolation terminals shall be on the same side of the Cabinet as the AC service inputs. DC terminals and loop detector terminals shall be installed on the opposite side of the Cabinet from the AC power

lines, to reduce electromagnetic induction. The surge protector panels shall be designed to allow for adequate space for a wire connection and surge protector replacement. Surge protection shall be provided for the full capacity of the Cabinet Input File.

3.2.2 Intent of Surge Protection - It is the intent of the Department to require surge protection on each CALTRANS defined input; that is, full protection. For example, on the 336S Cabinet, Vehicle Loop Detector Surge Protection would be required on two (2) channels each, of Slots 1 to 8 of the Input File. In addition, on the remaining Slots 9 to 14, Pedestrian surge protection; plus Auxiliary (pre-emption) protection as defined.

On the 332A Cabinet, full protection is desired on both Input Files. For example, Vehicle Loop Detector Surge Protection would be required on two (2) channels each, of Slots 1 to 8 of BOTH INPUT FILES I AND J; together with pedestrian and auxiliary protection on both racks.

3.2.3 For the 332A Cabinet, appropriate input surge protection shall be mounted on the INPUT TERMINATION PANEL. For the 336S Cabinet, appropriate input surge protection shall be mounted on a FOLD-DOWN TERMINATION PANEL on the rear of the cabinet assembly. This fold-down panel shall not obstruct the Output File Field wiring when in the closed position and shall utilize thumb-screws to secure the panel under normal operating conditions.

3.2.4 Under no circumstance (normal operation or short-circuit condition) shall the ampacity of the internal wiring and printed circuit board traces be less than the protecting threshold of circuit breakers and surge protectors provided.

3.2.5 Power Distribution Assembly - The Power Distribution Assembly of each Controller Cabinet shall include a lightning/surge/transient protection unit on the AC Service Input. It shall be capable of reducing the effect of lightning transient voltages applied to the AC line. The protector shall be a two-stage series/parallel device, and shall be an EDCO SHA-1250 (or approved equal). It shall have the following features and functions:

- * Maximum AC line voltage: 140 VAC
- * Twenty pulses of peak current, each of which will rise in 8 microseconds and fall in 20 microseconds to one-half the peak: 20,000 Amperes
- * The protector shall be provided with the following terminals:
 - Main line (AC Line first stage terminal)
 - Main Neutral (AC Neutral input terminals)
 - Equipment Line Out (AC Line second stage output terminal, 10 Amps).
 - Equipment Neutral Out (Neutral terminal to protected equipment).
 - Ground (Earth connection)
- The Main AC line in and the Equipment Line out terminals shall be separated by a 200 Micro Henry (minimum) inductor rated to handle 10 Amp AC Service.
- The first stage clamp shall be between Main Line and Ground terminals.
- The second stage clamp shall be between Equipment Line Out and Equipment Neutral.

Input File shall be in accordance with the assignment of the slots of a standard 336S Cabinet assembly. device rated at 20 KA; and be of a completely solid stage design (i.e. no gas discharge tubes allowed).

- The Main Neutral and Equipment Neutral Output shall be connected together internally, and shall have an MOV (or similar solid state device, or gas discharge tubes) rated at 20 KA between Main Neutral and Ground terminals.
- Peak clamp voltage: 250 Volts at 20 KA. (Voltage measured between Equipment Line Out and Equipment Neutral Out terminals. Current applied between Main Line and Ground Terminals with Ground and Main Neutral terminals externally tied together).
- Output voltage shall never exceed 280 volts.
- The Protector shall be epoxy-encapsulated in a flame retardant material.
- Continuous service current; 10 Amps at 120 VAC RMS.
- The Equipment Line Out shall provide power to the Type 170 Controller, and to the 24 V power supply.

3.2.6 Inductive Loop Detector Inputs - Each inductive loop detector input channel shall be protected by an external surge protection device which shall be an EDCO SRA-6LC (or approved equal) meeting or exceeding the following requirements:

- It shall be a three-terminal device, two of which shall be connected across the signal inputs of the detector. The third terminal shall be connected to chassis ground to protect against common mode damage.
- It shall instantly clamp differential mode surges (induced voltage across the loop detector input terminals) via a semiconductor array. The array shall be designed to appear as a very low capacitance to the detector.
- It shall clamp common mode surges (induced voltage between the loop leads and ground) via solid state clamping devices.
- It shall meet or exceed the following requirements:

Peak Surge Current (six times)	
Differential Mode	400 Amps (8x20 μ s)
Common Mode	1000 Amps (8x20 μ s)
Estimated Occurrences	500 @ 200 Amps
Response Time	40 ns
Input Capacitance	35 pf typical
Temperature	-40 degrees to +85 °C
Mounting	No. 10-32 x 3/8" bolt
Clamp Voltage	
@400 Amps Diff. Mode	30 volts max.
@1000 Amps Comm. Mode	30 volts max.

3.2.7 Signal Load Switches (Switch-Packs) - The outputs of each switch-pack in the output file shall be provided with a Metal Oxide Varistor (MOV), which is connected from the AC positive field terminal, to the chassis ground. The MOV shall be rated 150VAC, and shall be a V150LA20A.

3.2.8 Low Voltage DC Inputs - Each DC Input channel shall be protected by an external surge protection device, which shall be an EDCO SRA64-030N (or approved equal), that meets or exceeds the following:

- It shall be a five terminal device. Two terminals shall be connected to the line side of the low voltage pair, two terminals shall be connected to the Input File side, and the fifth terminal shall be connected to chassis ground.
- It shall meet the following minimum requirements:

Peak Surge Current	2000 Amps 8x20 µs Wave-shape
Occurrences at Peak Current	100 typical
Response Time	5 to 30 nanoseconds
Shock	Withstands 10-foot drop on concrete
Voltage Clamp	30 v
Series Resistance	15 ohms each conductor
Temperature	-20 Degrees to +85 °C

3.2.9 Pre-Emption & 115 VAC Signaling Inputs - Each pre-emption or AC signaling input channel shall be protected by an external surge protection device, which shall be an EDCO SPA-60BS-2 (or approved equal), that meets or exceeds the following:

- It shall be a three terminal device.
- It shall meet the following minimum requirements:

Peak Surge Current	2000 Amps 8x20 µs Wave-shape
Occurrences at Peak Current	25 minimum
Response Time	< 200 nanoseconds
Shock	Withstands 10-foot drop on concrete
Peak Surge Trip Point	< 890 V nominal
Temperature	-40 Degrees to +85 °C

4. **CABINETS** -

The Department will utilize the Cabinets listed below.

4.1 **Model 336S Cabinet Assembly** - (Item A4) (46" x 24" x 22") -

4.1.1 The Model 336S Cabinet Assembly shall be as specified in the CALTRANS Specifications. The Cabinet shall be capable of side-pole mounting, as well as base mounting. See Section 2.2 "Special Provisions" for additional requirements.

4.1.2 The 336S Cabinet shall incorporate input surge protection mounted on a FOLD-DOWN TERMINATION PANEL at the rear of the Cabinet Assembly. This fold-down panel shall not obstruct the Output File Field wiring when in the closed position and shall utilize thumb-screws to secure the panel under normal operating conditions. The fold-down portion of this panel shall be easily accessible and shall be mounted to the rack assembly.

4.1.3 The 336S Cabinet shall NOT have an AUXILIARY OUTPUT FILE. Additionally,

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Auxiliary Output files will not be added to a 336S Cabinet Assembly, therefore the additional wiring necessary to add an Auxiliary Output file shall not be installed. All assemblies in the 336S Cabinets shall be installed in the upper most position so that free space at the bottom of the cabinet is maximized.

4.2 **Model 332A Cabinet Assembly - (Item A3)** (66" x 24" x 30") -

4.2.1 The Model 332A Cabinet Assembly shall be as specified in the CALTRANS Specifications. This Cabinet shall incorporate an INPUT TERMINATION PANEL. See Section 2.2 "Special Provisions" for additional Pedestrian Pushbutton Termination requirements. The Cabinet shall be base mounted.

4.2.2 The 332A Cabinet Assembly shall be configured for 8 vehicle phases, 4 pedestrian phases and shall include an AUXILIARY MODEL 420 OUTPUT FILE, for 6 overlap phases.

4.3 **Model 332 Cabinet - (Item A5)** (66" x 24" x 30") -

4.3.1 The Model 332 Cabinet shall be base mounted and shall contain a standard rack assembly for the future installation of various ITS components. The cabinet shall meet all aspects of the physical and structural requirements stated in Section 2.2 "Special Provisions".

The following shall be installed:

A 3-terminal, 50-Amp AC Service bus shall be installed as well as a Thermostat and dual-fan ventilation system with two (2) cabinet filters. Two (2) Fluorescent light fixtures with front and rear door-activated switches shall also be installed.

The thermostat, fans and lights shall be appropriately wired. The service side of the AC+ and AC Neutral wires for this equipment shall be neatly dressed and brought down the full length of the side-panel of the Cabinet Assembly for DOT personnel to terminate at a later time.

4.3.2 This Cabinet may be used by the Department for future projects such as ramp metering, sign

control, speed detection, or freeway surveillance.

5. **CONTROLLER UNIT – (Item A1)**

5.1 Furnish Model 2070L Controllers. Units shall conform to CALTRANS *Transportation Electrical Equipment Specifications* (TEES), dated July 21, 2008 except as required herein. Units shall also be approved as stated on the current NCDOT "Qualified Products List". Provide model 2070L Controllers with the latest version of OS9 operating system and device drivers, composed of the unit chassis and at a minimum, the following modules and assemblies:

- Model 2070-4B Power Supply Module, 3 AMP
- Model 2070-3B Front Panel Module
- Model 2070 1B CPU module, single board
- Model 2070-2A Field I/O Module
- Model 2070-7A Asynchronous Serial Com Module

6. **POWER DISTRIBUTION ASSEMBLY 2 –**

6.1 Assembly - The Power Distribution Assembly shall be as specified in the CALTRANS

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Specifications for Assembly 2, and modified as follows. The Assembly shall include an EDI Model 206L Switching Power Supply as stated in Section 2.2 "Special Provisions".

6.2 Protection - It shall include over-voltage protection as described in the paragraph "SURGE PROTECTION" (EDCO SHA-1250 or approved equivalent). See Section 2.2 "Special Provisions" for additional requirements.

7. MODEL 200 LOAD SWITCH – (Item A6)

7.1 The Load Switch shall be a PDC MODEL SSS-88 LOAD SWITCH, meeting or exceeding the CALTRANS and Los Angeles County Specifications.

8. MODEL 204 FLASHER – (Item A7)

8.1 The flasher module shall be a PDC MODEL SSF-88 FLASHER, meeting or exceeding the CALTRANS and Los Angeles County Specifications.

9. MODEL 2010 ECL-IP CONFLICT MONITOR - WITH ABSENCE OF RED MONITORING – (Item A2)

9.1 The Conflict Monitor shall be an EDI Model 2010 ECL-IP Conflict Monitor.

9.2 The Conflict Monitor Unit shall contain a 10/100 Ethernet port on the front panel for the uploading of alarms and/or event logs with a standard laptop computer. This port shall also allow for future communication within an Ethernet-based infrastructure.

9.3 Red Monitor Harness -

A connector and terminal assembly designated as P20 (Magnum P/N722120 or equivalent), for monitoring the absence of red, shall be an integral part of the output file. The connector shall terminate, and be compatible with, the cable and connector of a Type 170 Conflict Monitor unit (CMU), capable of monitoring the absence of red.

The P20 cable shall be routed internally or between the rack assembly and cabinet wall. The cable shall be anchored to the front of the output file so that the Conflict Monitor Unit cannot be removed with the cable attached. The pin assignments of the P20 connector and terminal assembly shall be provided with the Cabinet plans. The P20 connection shall be physically "keyed" to prevent the cable from being installed incorrectly.

9.4 Programming of Unused Red Channels -

All Cabinet assemblies shall be provided with a means of applying AC+ to unused red channels by the configuration of dipswitches on the Red Enable board. The Red Enable board in all Cabinet Assemblies shall have full compatibility with model 210N and 2010ECL Conflict Monitor Units. See Section 2.2 "Special Provisions" for additional

requirements.

10. MODEL 222 LOOP DETECTOR AMPLIFIERS – (Item A9)

10.1 Type -

The Loop Detector Amplifier Unit shall be an EDI MODEL 222 (or equivalent) as specified in the CALTRANS Specifications. The detector shall be two (2) channels.

10.2 QPL -

The Detector shall be CALTRANS QPL and NCDOT QPL listed and shall perform properly when installed in new or existing Cabinet Assemblies in SC.

11. LCD ENHANCED/INTELLIGENT LOOP DETECTOR AMPLIFIER – (Item A8)

11.1 Type -

The Loop Detector Amplifier Unit shall be an EDI Oracle or Reno A&E Model C Rack Mount Detector Amplifier or approved equivalent. The Detector shall be NCDOT QPL listed and shall perform properly when installed in new or existing Cabinet Assemblies in South Carolina.

12. MODEL 242 D.C. ISOLATOR – (Item A10)

The D. C. Isolator unit shall be a MODEL 242 as specified in the CALTRANS Specifications.

13. MODEL 430 FLASH TRANSFER RELAY – (Item A11)

The Flash Transfer Relay unit shall be a MODEL 430 as specified in the CALTRANS Specifications.

14. DIAGNOSTIC TEST PROGRAM -

14.1 Controller Test -

This item shall consist of a Diagnostic Test Program, having features, such as those utilized and specified by CALTRANS and the North Carolina Department of Transportation. The Diagnostic Test Program shall test the operation of a Model 2070L Controller unit, including but not limited to: internal memory, the real-time clock, input-output circuitry, the display, display backlight and the keyboard.

14.2 Cabinet Test -

A Diagnostic Test Program shall verify the operation of Cabinets furnished under this bid. The Program shall test Cabinet wiring related to the Output file, Input File, Conflict Monitor, Police panel, and Flash switches. This test may be provided on a set of EPROMS for use in a 170E Controller.

14.3 BIDS SHALL PROVIDE full documentation on the supplied test programs, their operation, and features. It shall be possible to send output reports to an external printer, or to a file on an IBM Compatible Personal Computer. Any third party PC software necessary shall be clearly stated and named.

15. SUITCASE TESTER (FOR 170/2070 CONTROLLERS) – (Item A12)

15.1 Option -

This item shall be ordered at Department option.

15.2 General -

This shall be a stand-alone portable tester, mounted in a sturdy suitcase/briefcase, of size large enough to hold cables and manuals. An intersection mockup display shall be incorporated on the top half. LED indicators shall be used on all applicable outputs, in the appropriate color, at the appropriate intersection location. Indications include all channels for eight (8) vehicle phases and four (4) pedestrian phases. The unit shall also have additional indications for six (6) auxiliary vehicle overlaps and four (4) pedestrian yellow channels as well as 'watch dog' and 'detector reset' indications. Three (3) position On-Off-On switches shall activate inputs. The downward motion of the switch shall be a momentary closure. All outputs/indications shall be appropriately labeled by function and all inputs shall be labeled by the applicable C-1 and/or C-11 pin number.

16. AUTOMATIC TESTER (FOR 210N AND 2010ECL CONFLICT MONITORS) – (Item A13)

16.1 Option -

This item shall be ordered at Department option.

16.2 General -

This shall be a stand-alone portable "Tester", intended for use on a workbench. The Tester may utilize an IBM compatible computer for input/output. The Tester shall test Conflict Monitor displays; timing and voltage functions; input/output combinations for true or false conflicts. Any software shall be modular, menu driven, and offer "help" screens as well as having compatibility with SCDOT's Current Windows XP Professional Software. A video "setup/usage" training tape shall be provided with each unit. All input/outputs shall be in plain English. It shall be possible to generate a hardcopy printout, or to store the results to a disk file. A "No Faults Detected" report shall be displayed as appropriate.

17. MODEL 2070-7A. ASYNCHRONOUS SERIAL COMM MODULE – (Item A17)

17.1 Option -

This item shall be ordered at Department option. It will be used in addition to the 2070-7A Module furnished with each 2070L Controller at Field Master and/or Local Intersections requiring an additional Serial Port.

17.2 Unit -

Units shall conform to CALTRANS *Transportation Electrical Equipment Specifications (TEES)*, dated July 21, 2008 except as required herein.

18. EXTERNAL FIBER OPTIC MODEM – (Item A18)

18.1 Option -

This item shall be ordered at Department option. It will be used at 2070L Master and/or Local Controllers requiring Fiber Optic Communication within a Closed-Loop System.

18.2 Unit -

Units shall be approved as stated on the current North Carolina Department of Transportation Qualified Products List. The modem used for this contract shall be the Traffic Fiber Systems Model FO-512 Fiber Optic Data Link or approved equivalent. The modem shall be furnished with a power supply AND RS-232 cable.

The RS-232 cable used for this contract shall provide a fully functional, full-duplex communication link between a Serial Port on the 2070-7A Comm Module and the supplied Fiber Optic Modem. The cable shall be a minimum of 3' in length. The connectors shall include a protective shell and must utilize two (2) industry-standard thumb-screws to secure the cable in place at both ends without having to use any tool. The connector assembly shall also be manufactured in such a way that the connecting cable and connector are secured to prevent unintentional electrical and/or physical separation. The cable shall have connections with the proper gender on each end (without the use of gender adapters) and shall be clearly labeled.

19. EXTERNAL DIAL-UP MODEM – (Item A19)

19.1 Option -

This item shall be ordered at Department option. It will be used in either the Central Office, or at a Field Master or Local Intersection requiring dial-up access.

19.2 Unit

The dial-up modem used for this contract shall be the US Robotics V.92 External Modem. The modem shall be furnished with a power supply, telephone cable AND RS-232 Cable.

The RS-232 cable used for this contract shall provide a fully functional, full-duplex communication link between a Serial Port on the 2070-7A Comm Module and a US Robotics V.92 External Modem for telecommunications. The cable shall be a minimum of 3' in length. The connectors shall include a protective shell and must utilize two (2) industry-standard thumb-screws to secure the cable in place at

both ends without having to use any tool. The connector assembly shall also be manufactured in such a way that the connecting cable and connector are secured to prevent unintentional electrical and/or physical separation. The cable shall have connections with the proper gender on each end (without the use of gender adapters) and shall be clearly labeled.

20. CABINET ASSEMBLY DISPLAY UNIT – (Item A20)

20.1 Option -

This item shall be ordered at Department option. It will be used by Technicians in SCDOT Signal Shops.

20.2 Unit -

The unit required for this contract will be used by signal shop technicians during the set up and integration of 336S and 332A Cabinet Assemblies. Via permanent screening, the unit will display a mock-up of a quad intersection with left turns and shall implement appropriately arranged and colored AC-driven LED indications (P/N: LED-120PSB or equivalent) of all channels for eight (8) vehicle phases and four (4) pedestrian phases. The unit shall also have additional indications for six (6) auxiliary vehicle overlaps and four (4) pedestrian yellow channels. The display unit shall include a removable harness that is a minimum of 6' in length, with black, 22-gauge termination wires for all indications as well as one (1) white, 22-gauge AC Neutral and one (1) green, 22-gauge Chassis Ground termination. All wires shall have #10 stud spade lugs installed and shall be labeled by phase and color.

The display unit shall provide proper load to accurately simulate on-street, AC signal terminations for testing purposes within a signal shop environment. This unit shall be designed so that it can be placed on top of the Cabinet Assembly, or hung on the inside of the front door of any Cabinet Assembly supplied for this contract.

21. MODEL 206L POWER SUPPLY – (Item A21)

21.1 Option -

This item shall be ordered at Department option. It will potentially be used to upgrade existing standard Power Supply Units in the field.

21.2 Unit -

The unit required for this contract shall be the EDI Model 206L Power Supply or approved equivalent. The Power Supply Unit shall incorporate switching design technologies as well as Power Factor Correction. See Section 2.2 "Special Provisions" for additional physical requirements.

22. REPLACEMENT RED ENABLE BOARD FOR 332A AND 336S CABINET ASSEMBLIES – (Item A15)

22.1 Option -

This item shall be ordered at Department option. It will potentially be used to replace damaged or malfunctioning Red Enable boards within 332A and 336S Cabinet Assemblies supplied for this contract. Items furnished shall be identical to the red enable boards furnished with the 332A and 336S Cabinet Assemblies for this contract.

22.2 Unit -

See Section 2.2 "Special Provisions" for additional requirements.

23. REPLACEMENT #3 LOCK AND KEY SET – (Item A16)

23.1 Option -

This item shall be ordered at Department option. It will potentially be used to replace faulty or damaged lock assemblies in existing Cabinet Assemblies in the field as well as within cabinet Assemblies

furnished for this contract.

23.2 Unit -

See Section 2.2 "Special Provisions" for additional requirements.

- PART B ADMINISTRATION -

1. QUALITY ASSURANCE PROVISIONS -

1.1 Intent -

The intent of this section is to establish quality requirements for the equipment, materials, and services to be furnished under this Contract.

The reliability and workmanship of the products provided will be continually evaluated by SCDOT personnel. Repeated problems with product dependability, vendor support, cabinet wiring, design flaws, poor craftsmanship and the like will not be tolerated. Failure of the Vendor/Manufacturer to fulfill the obligations specified to the satisfaction of the Department, shall constitute sufficient cause to terminate this contract and remove that Manufacturer from the approved bidders list.

1.2 CALTRANS -

All items shall meet the electrical, environmental, and testing requirements as specified in CALTRANS Specifications. The Vendor shall supply with each shipment, a full TEST REPORT of the quality control and the final test of each item. The test reports shall indicate the name of the tester, and shall be signed by a responsible manager. This "Certificate Of Compliance" shall be attached to the Packing List.

1.3 QPL -

As stated at the beginning, all CALTRANS standard items shall be furnished only by a Manufacturer on the latest "Qualified Products List" as well as the North Carolina Department of Transportation "Qualified Product List".

1.4 Latest -

The equipment to be furnished shall be of current production, and shall be the Manufacturer's standard model. If any of the equipment furnished is no longer available the supplier shall provide a replacement accepted by SCDOT at no additional cost.

2. WARRANTIES AND SERVICE -

2.1 Warranty Period -

The Vendor shall fully guarantee all items, equipment and materials provided under this contract. The duration of the warranty or guarantee shall be the standard of the industry, with a minimum period of TWENTY-FOUR (24) MONTHS from the date of shipment to the Department. The Vendor shall mark each item with the date of shipment. The warranty shall cover all Manufacturer's defects, including parts, labor, and shipping costs. Any item found not in accordance with this Specification will be rejected, and returned to Vendor at the Vendor's expense for immediate replacement. A second occurrence of this infraction will be sufficient reason for total rejection of the contract for that item.

2.2 Repair -

The vendor shall have an office and/or authorized factory representative within 250 miles of **central South Carolina (assumed Columbia)** and be able to perform on-site warranty repair or replacement, within 2 working days after receiving complaint. The authorized factory representative shall have a permanent office located within the specified range. This office shall have a permanent street

address, Air Conditioning and Heat, a permanent indoor restroom, a listed voice number, fax machine and number, and computer/internet access with a valid e-mail address.

2.3 Extension -

Following warranty repair or replacement, the warranty period (for that item or module), shall be extended for an additional period of one (1) year.

2.4 Vendor -

If the equipment Vendor is other than the Manufacturer, then the Vendor shall be fully responsible for all warranties and requirements of this Specification.

3. REPARABILITY AND SERVICE -

3.1 Service -

The Vendor/Manufacturer shall provide services adequate for the operation, repair, and replacement for each item. Adequate service will apply to reasonable response provided by technical personnel experienced with each item.

3.2 Repair Parts -

The Vendor shall be able to ship to the Department within three (3) working days, any component parts required to maintain this equipment.

3.3 Maintenance and Repair Services -

3.3.1 BIDS SHALL PROVIDE complete data on maintenance and repair services available, for the

convenience of the Department, in the post-warranty period.

3.3.2 This maintenance data shall include location of the service facility, services offered, turn-around time, and estimated repair costs.

3.3.3 Services shall extend to any agency or municipality using equipment purchased under this contract.

4. DOCUMENTATION -

(This Section supersedes the CALTRANS Specification.)

4.1 Required -

The Manufacturer/Vendor (successful bidder) of COMPLETE CABINET ASSEMBLIES shall be responsible for providing with each and every Complete Assembly Cabinet, one (1) complete Cabinet Wiring Diagram.

4.2 Other Equipment -

Documentation is also required for the Controller, and for each auxiliary piece of equipment. The intent is to require documentation sufficient for operation and maintenance of the equipment, to the satisfaction of the ENGINEER. All documentation shall be prepared in a clear, concise manner; with appropriate illustrations, tables, and cut-away drawings, and voltage/waveform reference pictures.

4.3 Binding -

The documentation shall be adequately BOUND, for protection and to prevent loss of pages. Binding should consist of two heavy-duty staples, with binding tape; or plastic spiral binding. Fonts and sizes shall be per CALTRANS Specifications.

4.4 Contents -

The documentation material shall include, but not be limited to, the following:

- 4.4.1 General description.
- 4.4.2 Installation procedure.
- 4.4.3 Operating procedure.
- 4.4.4 Theory of operation, voltages, wave forms.
- 4.4.5 Maintenance and trouble shooting procedures.
- 4.4.6 Schematic diagrams of circuits and IC boards.
- 4.4.7 Pictorial layout of IC board components.
- 4.4.8 Parts list including description, reference symbol, part number and location.

4.5 Number -

The following number of Documentation Sets shall be furnished by the Vendor (successful bidder) of each individual Item.

4.5.1 For use by Maintenance at the District level, a maximum of seventy-five (75) sets for each Item; to be furnished at award. (7 districts x 15 sets per district = 75 sets total for each Item.)

4.5.2 For use by the Director of Maintenance (Columbia) a maximum of six (6) sets of documentation for each Item, to be furnished at award.

4.5.3 For use by the Director of Traffic Engineering (Columbia), a maximum of twelve (12) sets of documentation for each Item, to be furnished at award.

4.5.4 When other municipalities or agencies "BUY OFF OF" this Contract, they shall be furnished two (2) complete sets for each Unit purchased.

5. TRAINING -

5.1 Required:

Five (5) Formal "hands-on" classroom-training sessions are required as a condition of this Contract.

Resume's and certifications for instructors and training agenda's are to be supplied to the Department for approval.

The training shall provide a personal "take-home" package of training materials/documentation for each student. All costs for the five Training Sessions shall be included in the Unit Price bid for each item. Training shall be conducted for the (5) five separate schools in Department facilities at the same or, at the discretion of the Department at different locations. Training shall be scheduled to occur in one contiguous week, with not more than 6 hours of training in any one day. All training shall be held during the Department's normal working hours.

5.2 Complete Cabinets -

The Vendor of "Complete Cabinet Assemblies" shall provide training in the design, operation, and maintenance of 2070 controllers and associated equipment; and of cabinet set-up and configuration.

5.2.1 The Vendor of Complete Cabinet Assemblies shall be prepared to present a minimum of 18 hours of classroom and "hands-on" training.

5.3 Individual Items -

The Vendor of Individual Items shall be prepared to present 6 hours of classroom and hands-on training for individual bid Items. Details of this training shall be coordinated with the Department, and with

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other Vendors, including subject and materials required.

5.4 Required - (each complete session)

5.4.1 DAY 1: A maximum of 20 people, would receive "engineering related training", including: Introduction, Equipment description, Operation, and engineer controlled cabinet setup.

5.4.2 DAY 2, DAY 3: A maximum of 20 persons would receive "hands-on" training on maintenance and repair of all user serviceable equipment. Maintenance training shall include field level trouble-shooting. This training shall be for a minimum duration of 2 days.

5.4.3 DAY 4 (and DAY 5 if needed): The group of 20 as above shall receive Training on Individual cabinet Items. The subjects shall be coordinated between Vendors, to avoid duplication.

5.5 Training Dates -

Training classes shall start within fifteen (15) days of the receipt of the first shipment of equipment by the Department (unless otherwise directed). ALL FIVE TRAINING CLASSES shall be completed within (3) three months of receipt of the first shipment.

5.6 Additional -

At each Contract Anniversary, an additional three (3) day training class shall be presented by the Vendor of Complete Cabinet Assemblies, for up to 20 persons at a location approved by the state.

5.7 BIDS SHALL PROVIDE full details of the proposed training package, including: method, type, materials, and duration. Attach a statement.

6. PREPARATION FOR DELIVERY -

6.1 Packaging -

Equipment shall be appropriately boxed or crated for shipment, to prevent physical damage. The Vendor shall make shipments using the minimum number of containers consistent with the requirements of safe transit, available mode of transportation, and routing. The boxes or crates shall be sealed in 3 mil thick polyethylene plastic sheeting for outdoor storage. Complete Cabinet Assemblies shall be shipped as one unit. Items of equipment packed inside the Cabinet shall be protected and secured for shipment.

6.2 Pallets -

Cabinet(s) shall be attached to shipping pallets. Pallets and mounting shall be as shown on CALTRANS "Cabinet Housing #2 / Adapters & Shipping Pallet" Details" 7-5-7.

6.3 Labeling -

6.3.1 Each Cabinet/box shall be clearly labeled, IN PLAIN ENGLISH as to the contents; for example: "Type 332A Cabinet".

6.3.2 All packages shall be identified with the Department PURCHASE ORDER NUMBER. Packing lists and EQUIPMENT LABELS shall be glued to every carton showing its contents.

6.3.3 Certificate of Compliance. A "Certificate Of Compliance" shall be attached to the packing list of each shipment. See Section 1, PART B "Quality Assurance Provisions".

7. DELIVERY SCHEDULE -

7.1 Delivery - The deliveries for Complete Cabinet Assemblies, Individual Items, Auxiliary Equipment, etc. shall be made to the Supply Depot in Columbia or to the District Signal Shops if

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requested by SCDOT. When purchased as part of a System the delivery shall be made to a District/location near the Site of work if it is deemed necessary.

7.2 Time- The maximum delivery time permitted will be SIXTY (60) DAYS "After Receipt of Order" (A.R.O.).

7.3 Special Orders - The Vendor shall follow the shipping instructions as stated on the Purchase Order or attachments.

8. MULTI-YEAR PURCHASE CONTRACT BID INFORMATION -

8.1 Contract -

It is the intent of the Department to secure a "source of supply". A BID or Proposal submitted against this Specification, shall establish a PURCHASE CONTRACT between the Vendor (or Manufacturer) and the Department. The Quantities shown on Bid are APPROXIMATE, intended to establish Unit Prices, and enable correct proposal evaluation with a balanced bid. They are subject to later circumstances.

8.2 Term -

See "SPECIAL CONDITION - TERM CONTRACT, Term Option To Extend." The PRICES entered on the BID or Proposal, by the Vendor or Manufacturer, shall be valid for an initial ONE (1) YEAR PERIOD. Based upon mutual agreement, the Contract may be extended for FOUR (4) ADDITIONAL ONE YEAR PERIODS (total of five years). An annual cost adjustment will be allowed as shown in the "SPECIAL CONDITION", {SCT 011} based upon the Producer or Consumer Price Index.

8.3 Lot Size -

It shall be possible to purchase Controllers and related equipment, from time-to-time, in various lot sizes, for shipment to various Departments or Depots.

8.4 Statewide -

See "SPECIAL PROVISIONS - TERM CONTRACT"

It shall be possible for Local Public Procurement Units to "buy off of or be furnished equipment through this contract", receiving the same prices, services, and warranties. A TRAINING CLASS shall be provided for that Agency (when requested), provided they purchase 10 or more Controllers.